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THE M<sup>C</sup>ILVAINE PLAN  
*of*  
HOME HEATING  
WITH OIL









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McILVAINE BURNER CORPORATION

40 North Washington Avenue

CHICAGO, ILL.





THE use of oil fuel for home heating, with its many recognized advantages, has been simplified and greatly improved by the distinctive design and the new and improved method of operation of the McIlvaine Oil Burner.

In all types of heating systems—hot air, hot water, vapor and steam, the soundness of the McIlvaine Plan of continuous operation and even heat has been demonstrated by actual service and test.

*The McIlvaine is dependable.* It is simple in design, durable in construction and trouble proof in operation. Throughout the heating season—*Your comfort is assured.*

*The McIlvaine is economical.* By its exclusive method of operation every particle of oil is turned into heat in such a manner that your furnace operates at its highest efficiency. You get more heat per gallon—*You use less oil.*

*The McIlvaine is quiet.* It does not attract your attention by bursting from a flicker to a roaring blaze every time the house temperature drops a few degrees. It runs smoothly and evenly—*It does not disturb you.*

As you read further in this booklet you will see how easily and completely a McIlvaine Burner installed in your home exchanges the trouble, dirt and uneven temperature of coal for the convenience, cleanliness and comfort of oil heat.



## *The Importance of a Proper Mixture of Oil and Air*

Certain facts about the burning of fuels are well known to everyone. Whether you burn wood, coal or oil, a supply of oxygen from the air is necessary in order to support combustion. If there is not enough air in proportion to the amount of fuel, the fuel does not burn completely and is not all turned into heat. On the other hand, an excess supply of air absorbs useful heat and carries it up the chimney.

Probably the simplest way of burning oil in your furnace would be to run the oil into some sort of vaporizing and mixing chamber and allow the natural chimney draft to supply the air. With this method, while you could control your oil supply by means of a valve, you could not similarly control your air supply; for your chimney draft is very unsteady on account of the changing conditions of wind and temperature out doors.

Thus you could not get the full measure of heat from your oil because it would be impossible to maintain the correct proportion of air to oil. In fact your oil burner would be similar to a very large oil lamp and would flicker and smoke exactly like a small lamp burning in a drafty room.

Every automobile owner knows what it means to have a proper mixture of gasoline and air to get the greatest efficiency from his motor. The same principle applies to oil and air for home heating.

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## *The McIlvaine Air Shutter*

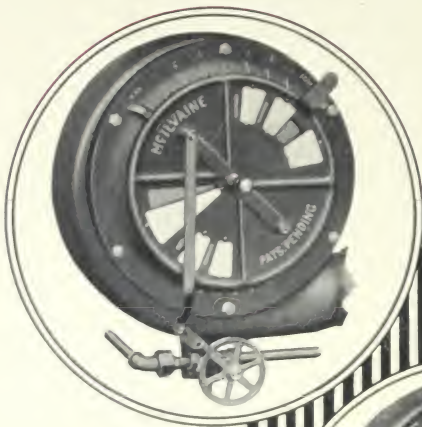


Figure A

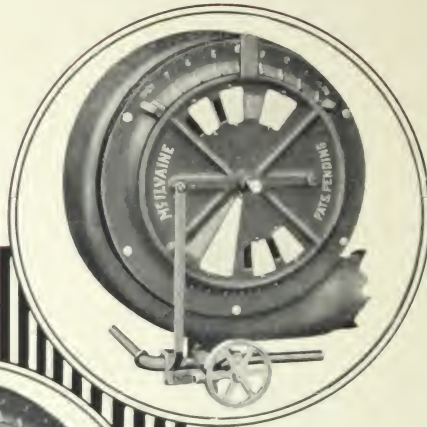


Figure B

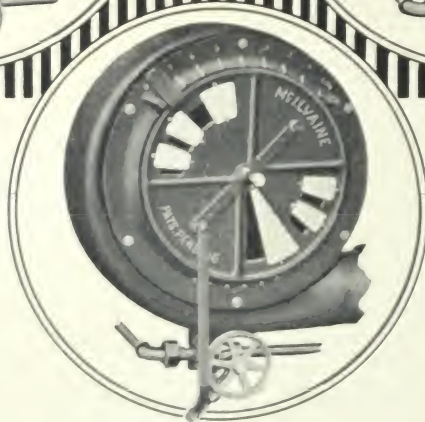


Figure C

In the McIlvaine Burner, a noiseless motor-driven fan furnishes a positive supply of air and eliminates any effect of changing draft conditions. The amount of air necessary for proper combustion is definitely regulated by the McIlvaine Air Shutter in the side of the fan case. This shutter is directly connected by a link to the control valve which regulates the flow of oil.





To increase heat, you simply open the McIlvaine Air Shutter. This automatically increases the supply of oil in correct proportion and the result is a flame which gives you the maximum amount of heat out of every unit of oil you burn in your furnace.

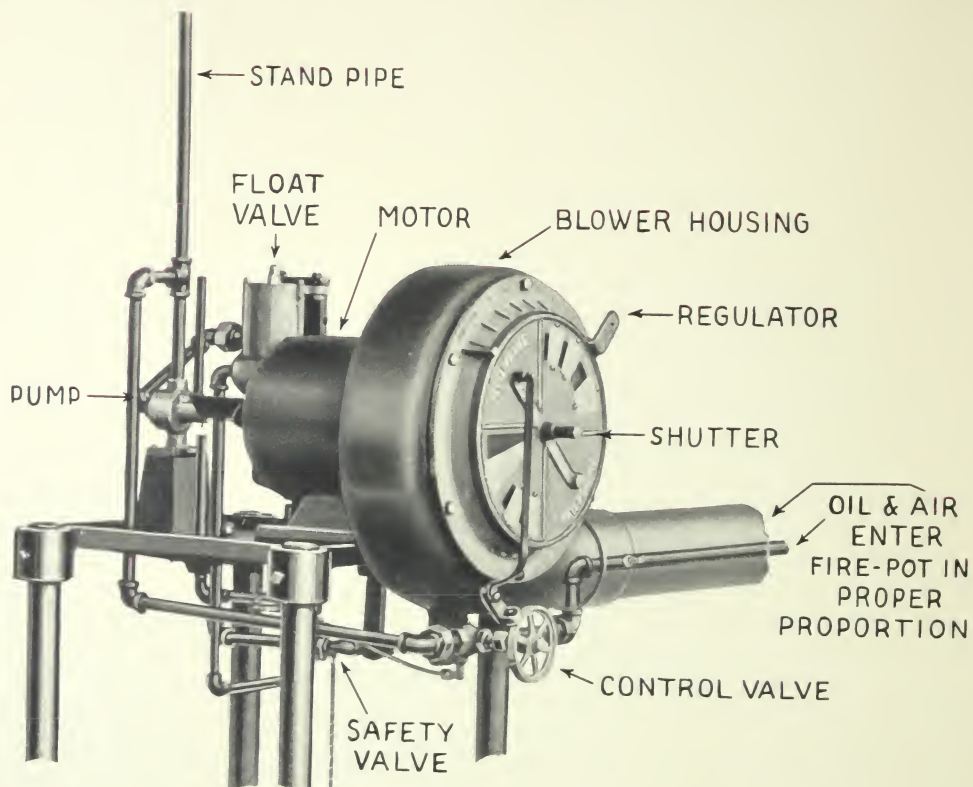
Figure A on the opposite page shows the position of the McIlvaine Air Shutter and oil control valve when the burner is operating at "LOW." This position should always be used when starting the burner or when the weather is mild.

As the weather becomes colder, you open the shutter to that position which gives the amount of heat wanted. As an illustration, we show in Figure B the shutter open to number 4 on the dial. In this position the McIlvaine will heat your home when the temperature is about that of an average January day.

In Figure C we show the shutter wide open. This position is very rarely needed and when used will give you enough heat to keep your house in perfect comfort when the temperature is 30 degrees below zero.

You can operate the McIlvaine Air Shutter in any way that you prefer. If you are accustomed to the familiar control chain running to some upstairs room in the house, you can easily regulate your heat in this way with very little attention. Unlike a coal furnace, which either tends to run away and waste coal by heating your house to eighty degrees or more, or to die out entirely, your McIlvaine Burner gives you heat exactly as you want it.

If you prefer automatic temperature regulation, your McIlvaine Burner may be equipped with a thermostat which automatically moves this shutter to the correct position to give you just enough heat. Thus you retain the advantages of even temperature and fuel economy by continuous even heating.





## *The Simplicity of the McIlvaine*

In the illustration on the opposite page the simplicity of the McIlvaine is shown by its small number of mechanical parts.

1. Oil flows through the safety valve to the float valve (at the left).
2. This feeds the oil at an even pressure to the small centrifugal pump no larger than a silver dollar.
3. When the motor is in operation, the pump delivers the oil through the control valve to the fire pot in the furnace.
4. The fan draws the correct amount of air through the shutter and delivers it to the fire pot.
5. In the fire pot the oil is vaporized and thoroughly mixed with the air assuring perfect combustion.

There are no intricate electrical devices or controls—everything operates by a law of nature, as positive as the law which says that water will run down hill.

*If it were not for the fact that there are other oil burning devices on the market operating by more complicated systems, the explanation of the McIlvaine Burner could stop right here; for this simple method of burning evenly and continuously, always keeping the supply of oil and air in correct proportion to each other, is the keynote of the simplicity and economy of the McIlvaine plan of operation.*

*Because there are other types of oil burners, known to many who will read this discussion, some further explanation and comparison is given in the following section.*





## *The Four Outstanding Advantages of Continuous Operation*

You and almost all other home owners are accustomed to a heating plant in which the fuel burns continuously.

The McIlvaine burns oil in this way giving it four distinct advantages over the intermittent method of oil burning:

1. *Simplicity*, because many regulating devices and controls are made unnecessary by continuous operation.
2. *Safety*, because no gas pilot light or electric ignition is needed.
3. *Economy*, because oil burning at a moderate rate gives up the greatest number of heat units to the furnace.
4. *Quiet*, because you operate with a *steady* moderate flame.

The fact that the McIlvaine has no pilot light will be very interesting to some people, and should be significant to all. By making the pilot light unnecessary, the risk of using a gas light which may go out or be blown out is eliminated, as well as the cost of gas required to maintain this separate flame. In some cases electric ignition is used or a combination of electric spark and gas.

With the McIlvaine no such delicate machinery is needed. On the McIlvaine your only flame is the oil flame, and your only control is the mechanical control of the supply of oil and air. There is no risk that the McIlvaine will fail to ignite—for its oil flame is always burning; there is no danger from explosion due to delayed ignition—such a possibility is entirely eliminated by the gradual way in which the amount of flame is regulated to give the desired heat.



*When a McIlvaine is installed in your furnace it is done without removing the grate bars or any other part of your furnace, except the coal door which is replaced by an inspection door.*



## *The Economy of the McIlvaine System of Oil Burning*

If you force heat through a furnace too fast, you force some of the heat up the flue, and therefore do not give the furnace a chance to absorb this heat. But, by only burning the oil at a rate just high enough to keep the proper temperature, the McIlvaine Burner gets the greatest heat value out of every gallon of oil which it burns, and allows the least possible amount of heat to escape. With a burner which operates intermittently, every gallon of oil that is burned is forced through the furnace as fast as if the temperature were thirty degrees below zero.

When an intermittent burner starts, during the time required to heat the fire box, boiler and chimney, there is a decided loss of efficiency through poor combustion. A loss also occurs after the intermittent burner shuts off, because between periods of operation cold air from the adjoining basement rushes through the hot furnace up the chimney and carries away stored up heat. Furthermore, your furnace was never built to withstand the expansion and contraction strains caused by such intermittent heating and cooling.

In average winter weather you would not think of building a big coal fire in your furnace in the morning, opening all the drafts, and then letting the coal burn out about eleven o'clock, only to repeat this performance again in the afternoon. Experience will tell you that a steady flame burning in your furnace will supply sufficient even heat with the smallest amount of fuel.





**G. F. GEBHARDT**  
MECHANICAL ENGINEER

INSPECTION, TESTS AND CONSULTATION — OFFICE AND LABORATORIES  
ARMOUR INSTITUTE OF TECHNOLOGY

CHICAGO

October 9, 1925

McIlvaine Burner Corporation,  
6 North Michigan Avenue,  
Chicago, Illinois.

Gentlemen:

We have conducted a series of performance tests of a McIlvaine oil burner as applied to a Type 25-5 American Radiator hot-water boiler, and find that, in point of simplicity of construction, ease of operation, overall boiler and furnace efficiency and fuel economy, this burner rates very high.

In comparing the performance of the equipment when feeding fuel continuously with that when feeding intermittently (feeding one-half hour, and shut off one hour for a total elapsed time of 12 hours) the heat efficiency of the former was found to be 11.1 per cent higher than the latter; the oil consumption per hour being practically the same in each case.

Respectfully submitted,

G. F. GEBHARDT

Per *G. F. Gebhardt*  
Testing Engineer

### *Proof by Test*

Performance tests made at the Armour Institute of Technology by the above firm of consulting engineers definitely prove the economy of continuous operation. Complete data on these tests are in our files for your inspection.



## *The Result of Experience*

The McIlvaine Burner is the result of experience, grown out of experiment; it is the final answer to the question of the comfort, dependability and economy which correct oil burning can bring to your home.

See the McIlvaine in operation and you will realize that every statement made in this booklet is conservative. **Talk with any McIlvaine owner**, or with any of the representatives of the McIlvaine organization, and you will be convinced, that this is the oil burning system to free you from heating worries and give you continuous, complete satisfaction.

If there are any further questions in your mind regarding oil burning, or the McIlvaine Plan of Home Heating With Oil, a McIlvaine representative will answer them carefully, thoroughly, courteously. Just as this booklet has avoided exaggerated claims and stated only obvious facts—so you will find that the whole spirit of the McIlvaine organization is built upon a desire to deal in constructive facts, and let the heating system itself demonstrate the satisfaction which it will bring to you.

JOHN H. MCILVAINE,

*President*





